

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 2 is currently being cancelled.

Claims 1 and 5 are currently being amended.

No claims are currently being added.

This amendment cancels and amends claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claims remain under examination in the application, is presented, with an appropriate defined status identifier.

After amending the claims as set forth above, claims 1 and 3-7 are now pending in this application.

Applicants appreciate the indication in the Office Action that claims 5 and 6 contain allowable subject matter. By way of this amendment and reply, claim 5 has been amended to include the features of its base claim and any intervening claims. Therefore, claim 5 and claim 6 (which depends from claim 5) are now in allowable form.

In the Office Action, the disclosure (specification) was objected to because of minor informalities noted on page 2 of the Office Action. By way of this amendment and reply, the specification has been amended to correct the informalities noted in the Office Action, as well as other informalities found by Applicant's representative. No new matter has been added.

In the Office Action, claims 1 and 2 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,238,623 to Read et al.; claims 3 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Read et al. in view of U.S. Patent No. 6,199,170 to Dietrich; and claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Read et al. in view of U.S. Patent No. 6,611,922 to Ozcetin et al. These rejections are

traversed with respect to presently pending claims 1-4 and 7, for at least the reasons given below.

Read et al. discloses a system which has the following features:

(1) In a master control device 12, the master time 22 is produced based on a clock signal 80 from a GPS receiver 76 and the absolute time 82.

(2) The master control device 12 includes software processing therein, which causes a time delay in processing.

(3) A time signal 50a synchronized with the master time 22 is transmitted from the master control device 12 to the slave control device 14 first, and then the time set command signal 50b follows to adjust the internal time 30.

(4) The data demand 42 is transmitted at regular intervals from the master control device 12 to the slave control 14, and the master control device calculates the transmission delay time between the master control device 12 and the slave control device 14 by means of the return signal 44 to correct the transmission delay time so as to maintain the time accuracy in regard to the events, or synchronize the slave device 14. In the embodiment of Figure 3 of Read et al., the master control device 12 corrects a time attached to an event by the transmission delay time to maintain the accuracy of an event time. In Figure 4 of Read et al., the master control device 12 notifies the slave control device 14 of the transmission delay time as offset time 70, and the slave control device 14 in turn corrects its internal time to be synchronized with the master time 22 of the master control device 12.

In the present invention as exemplified by the claims under rejection:

a) a time signal distributor synthesizes the UTC synchronous pulse signal from the GPS receiver and an absolute time to produce a time synchronization signal. The time signal distributor has the synthesized signal but does not have a master time therein. The master device for time is the GPS receiver, which has the master time.

b) As the time signal distributor is constituted by hardware only, there is no delay in processing in the distributor, and thus there is no negative influence on synchronization.

c) The time synchronizing signal synchronizes the rising edge of the identification signal with the UTC, and is transmitted to the slave device in a fixed period.

d) The slave device produces a time according to the time synchronizing signal by a hardware clock counter, and extracts the difference with the slave device internal time so as to synchronize the slave device internal time with the master time of the GPS receiver.

Now, the differences between the cited art of record and the claimed invention as recited in the claims under rejection are summarized as follows:

Read et al. teaches that the master device produces the master time by a software-related process, based on the time information from the GPS, and sends and receives time information to and from the slave device. Thus, there is a delay in processing, which negatively affects time synchronization. To correct such delay, the delay in processing and transmission delay time are calculated.

In the present invention according to claim 1, the master time uses the time of the GPS receiver as it is, and a circuit configuration, which does not produce any delay in processing, is employed. Due to such a circuit configuration, the time synchronization signal is sent to the slave device in a fixed period so as to correct the internal time of the slave device.

Accordingly, the master device or a distributor can be constructed by means of hardware only. There is neither a need to provide a master time nor a need to correct the delay in transmission. Therefore, the claimed invention according to claim 1 realizes a system which is constructed in a simple fashion and synchronizes the times of plural slave devices with the GPS.

Thus, since none of the other cited art of record rectifies the above-mentioned shortcomings of Read, claim 1, as well as its dependent claims 2-4 and 7, are patentable over the cited art of record.

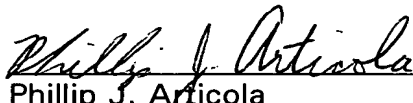
Accordingly, Applicant believes that the present application is now in condition for allowance, and an early indication of allowance is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

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